



TRANSPORTATION CABINET

Frankfort, Kentucky 40622
www.transportation.ky.gov/

Steven L. Beshear
Governor

Michael W. Hancock, P.E.
Acting Secretary

January 11, 2010

Kentucky Division of Water
ATTN: Jesse Robinson
200 Fair Oaks
Frankfort, Kentucky 40601

RECEIVED

JAN 12 2010

WATER QUALITY BRANCH

SUBJECT: Request for Water Quality Certification
KY-122 Relocation
Floyd County, Item No. 12-0282.00 /8404.00

Dear Mr. Robinson:

Submitted is a request for Water Quality Certification. This project is located in Floyd County and involves the relocation of KY state route 122 in Floyd County. One excess material site is proposed. The stream impacts associated with this KYTC project consist of perennial, intermittent, and ephemeral streams and occur in the same HUC 14 area. Mitigation for impacts to U.S. Waters is proposed in the form of in-lieu fees.

Enclosed is a permit application for your review. If you have any questions or need additional information, please contact me at (502) 564-7250 or by email at: ronb.rigneyii@ky.gov

Sincerely,

Ronald B. Rigney, II
Division of Environmental Analysis
Kentucky Transportation Cabinet



An Equal Opportunity Employer M/F/D

COMMONWEALTH OF KENTUCKY
NATURAL RESOURCES & ENVIRONMENTAL PROTECTION CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
DIVISION OF WATER

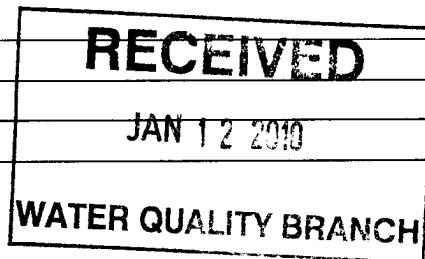
APPLICATION FOR PERMIT TO CONSTRUCT ACROSS OR ALONG A STREAM
AND / OR WATER QUALITY CERTIFICATION

Chapter 151 of the Kentucky Revised Statutes requires approval from the Division of Water prior to any construction or other activity in or along a stream that could in any way obstruct flood flows or adversely impact water quality. If the project involves work in a stream, such as bank stabilization, dredging or relocation, you will also need to obtain a 401 Water Quality Certification (WQC) from the Division of Water. This completed form will be forwarded to the Water Quality Branch for WQC processing. The project may not start until all necessary approvals are received from the KDOW. For questions concerning the WQC process, contact John Dovak at 502/564-3410.

If the project will disturb more than 1 acre of soil, you will also need to complete the attached Notice of Intent for Storm Water Discharges, and return both forms to the Floodplain management Section of the KDOW. This general permit will require you to create and implement an erosion control plan for the project.

1. OWNER: Kentucky Transportation Cabinet
Give name of person(s), company, governmental unit, or other owner of proposed project.
MAILING ADDRESS: 200 Mero Street, Frankfort, KY 40622
TELEPHONE #: 502-564-7250 EMAIL: _____
2. AGENT: Ronald Rigney, II
Give name of person(s) submitting application, if other than owner.
ADDRESS: 200 Mero Street, Frankfort, KY 40622
TELEPHONE #: 502-564-7250 EMAIL: ronb.rigneyii@ky.gov
3. ENGINEER: _____ P. E. NUMBER _____
Contact Division of Water if waiver can be granted
TELEPHONE #: _____ EMAIL: _____
4. DESCRIPTION OF CONSTRUCTION: Relocation of KY-122 at Meade Hill in Floyd County (see attached information)
Describe the type and purpose of construction and describe stream impact

5. COUNTY: Floyd NEAREST COMMUNITY: Hi Hat
6. USGS QUAD NAME: Wheel Wright, McDowell LATITUDE/LONGITUDE: 37.375818 / -82.739616
7. STREAM NAME: Left Fork Beaver Creek WATERSHED SIZE (in acres): >250 acres
8. LINEAR FEET OF STREAM IMPACTED: Perennial - 164 lf, Intermittent - 450 lf
9. DIRECTIONS TO SITE: Mountain Parkway to Salyersville and then on to Prestonsburg. Take KY 80 south to Garrett and turn left onto KY 7. Turn left onto KY1091 then left onto KY 122 at Buckingham. The Project is just north of Buckingham.



10. IS ANY PORTION OF THE REQUESTED PROJECT NOW COMPLETE? ☐ Yes ☒ No If yes, identify the completed portion on the drawings you submit and indicate the date activity was completed. DATE _____
11. ESTIMATED BEGIN CONSTRUCTION DATE: _____ Spring 2010
12. ESTIMATED END CONSTRUCTION DATE: _____ Fall 2011
13. HAS A PERMIT BEEN RECEIVED FROM THE US ARMY CORPS OF ENGINEERS? ☐ Yes ☒ No If yes, attach a copy of that permit.
14. THE APPLICANT MUST ADDRESS PUBLIC NOTICE
- (a) _____ Public notice in newspaper having greatest circulation in area (provide newspaper clipping or affidavit)
_____ Adjacent property owner(s) affidavits (Contact Division of Water for requirements.)
- (b) ☒ I REQUEST WAIVER OF PUBLIC NOTICE BECAUSE:
Project is exempt by regulation from the provisions of KRS 151.250
Contact Division of Water for Requirements.
15. I HAVE CONTACTED THE FOLLOWING CITY OR COUNTY OFFICIALS CONCERNING THIS PROJECT:
N/A
Give name and title of person(s) contacted and provide copy of any approval city or county may have issued.
16. LIST OF ATTACHMENTS: _____
List plans, profiles, or other drawings and data submitted. Attach a copy of a 7.5 minute USGS topographic map clearly showing the project location.
Vicinity map, plans and drawings of each stream impact site, a summary description of the impacts, stream assessment sheets, and in-lieu fee calculations.
17. I, _____ (owner) CERTIFY THAT THE OWNER OWNS OR HAS EASEMENT RIGHTS ON ALL PROPERTY ON WHICH THIS PROJECT WILL BE LOCATED OR ON WHICH RELATED CONSTRUCTION WILL OCCUR (for dams, this includes the area that would be impounded during the design flood).
18. REMARKS: _____

I hereby request approval for construction across or along a stream as described in this application and any accompanying documents. To the best of my knowledge, all the information provided is true and correct.

SIGNATURE: _____

Owner or Agent sign here. (If signed by Agent, a Power of Attorney should be attached.)

DATE: 1/11/2010

SIGNATURE OF LOCAL FLOODPLAIN COORDINATOR: _____

Permit application will be returned to applicant endorsed by the local floodplain coordinator.

DATE: _____

SUBMIT APPLICATION AND ATTACHMENTS TO:

ATTACHMENT

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

BACKGROUND INFORMATION

A. **REPORT COMPLETION DATE FOR PRELIMINARY JURISDICTIONAL DETERMINATION (JD):**

B. **NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD:** Kentucky Transportation Cabinet, 200 Mero Street, Frankfort, KY 40622; c/o Dave Harmon

C. **DISTRICT OFFICE, FILE NAME, AND NUMBER:**

D. **PROJECT LOCATION(S) AND BACKGROUND INFORMATION:** Item #12-282.00
(USE THE ATTACHED TABLE TO DOCUMENT MULTIPLE WATERBODIES AT DIFFERENT SITES)

State: Kentucky County/parish/borough: Floyd City: McDowell (nearest)
Center coordinates of site (lat/long in degree decimal format): Lat. 37.380139N, Long. 82.737778W.

Universal Transverse Mercator: 17 4138461N 346146E

Name of nearest waterbody: Left Fork Beaver Creek

Identify (estimate) amount of waters in the review area:

Non-wetland waters: 1281 linear feet: 1-36 width (ft) and/or acres.

Cowardin Class: N/A

Stream Flow: Perennial= 164', Intermittent= 450', Ephemeral= 667'

Wetlands: acres. N/A

Cowardin Class:

Name of any water bodies on the site that have been identified as Section 10 waters:

Tidal: N/A

Non-Tidal: N/A

E. **REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):**

☐ Office (Desk) Determination. Date:

☐ Field Determination. Date(s):

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction

notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable. This preliminary JD finds that there "may be" waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA. Data reviewed for preliminary JD (check all that apply - checked items should be included in case file and, where checked and requested, appropriately reference sources below):

- ☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:
- ☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
 - ☐ Office concurs with data sheets/delineation report.
 - ☐ Office does not concur with data sheets/delineation report.
- ☐ Data sheets prepared by the Corps:
- ☒ Corps navigable waters' study: Section 10 waters list provided by COE.
- ☒ U.S. Geological Survey Hydrologic Atlas:
 - ☐ USGS NHD data.
 - ☒ USGS 8 and 12 digit HUC maps.
- ☒ U.S. Geological Survey map(s). Cite scale & quad name: 1:24000, McDowell, KY.
- ☒ USDA Natural Resources Conservation Service Soil Survey. Citation: Floyd & Johnson Counties, (2000).

- ☒ National wetlands inventory map(s). Cite name: McDowell, KY NWI.
☐ State/Local wetland inventory map(s):
☒ FEMA/FIRM maps: Floyd Co. FIRM, (1990).
☐ 100-year Floodplain Elevation is:
☒ Photographs: ☐ Aerial (Name & Date):
or ☒ Other (Name & Date): Taken during assessments.
☐ Previous determination(s). File no. and date of response letter:
☐ Other information (please specify):

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

Signature and date of
Regulatory Project Manager
(REQUIRED)

Ronald B. Rigney 1/5/10
Signature and date of
person requesting preliminary JD
(REQUIRED, unless obtaining the signature is
impracticable)

Floyd County, Item No. 12-282.00

Stream ID No.	Latitude	Longitude	Flow Regime/ Cowardin Class	Estimated amount of resource in review area	Class of aquatic resource
PER1US	37.380139	82.737778	Perennial	60* linear feet	non-section 10 – non-wetland
PER1DS	37.382778	82.736389	Perennial	104** linear feet	non-section 10 – non-wetland
INT1	37.376349	82.733746	Intermittent	450 linear feet	non-section 10 – non-wetland
EPH1	37.373097	82.741952	Ephemeral	396 linear feet	non-section 10 – non-wetland
EPH2	37.375831	82.739933	Ephemeral	186 linear feet	non-section 10 – non-wetland
EPH3	37.376620	82.738877	Ephemeral	85 linear feet	non-section 10 – non-wetland

* One bank only

** Longer of two bank impacts

ATTACHMENT

Block 23

Avoidance and Minimization

This project provides many aspects of avoidance and minimization to waters. The reconstruction of this section of KY 122 utilizes most of the area of an abandoned railroad bed (prior disturbed area), including two tunnels. This has resulted in minimal impact on existing resources. The construction of two new bridges over Left Fork Beaver Creek will require the removal of old railroad bridge abutments that are restrictive to flow (end abutments are not aligned with the stream). Additionally, the two largest excess fill sites are located outside the floodway in the floodplain of Left Fork Beaver Creek; with footprints to avoid stream and wetland impacts.

Compensation

For intermittent and perennial stream impacts, the need for mitigation/compensation was based on whether an impact site was greater than 0.10 acres in area (including wetland impact acreage where appropriate), greater than 300 feet in length, or was determined to be a Special Aquatic Site (i.e., riffle/pool complex). For ephemeral streams, mitigation needs were based on impacts greater than 0.10 acres, but no length was utilized. However, the Division of Water (DOW) not only requires mitigation for intermittent and perennial streams where the impact is greater than 300 feet, but where the cumulative unmitigated impacts, within a 14-digit HUC watershed, exceeds 500 feet. There is one 14-digit HUC that defines the project site: 05070203-050-150 (Left Fork Beaver Creek).

In this watershed there is an impact to one intermittent stream (INT#1), resulting from the development of an excess fill site (Area #2). INT#1 has 450 feet of impact on a riffle/pool complex stream; requiring mitigation under both COE and DOW criteria.

There are two bridges proposed for Left Fork Beaver Creek, a perennial stream. The first bridge, at Sta. 35+79, will impact only one bank (right descending), for a length of 60 feet. The area to be disturbed for this pier construction is 0.014 acres. No mitigation is proposed. The second bridge, at Sta. 46+10, will impact both banks. The left descending bank will have a pier close to the edge of water, and also require stone slope protection along 80 feet of streambank. The right descending bank will be impacted by stone slope protection only; covering 110 feet of streambank length. Based on a field determined OHW, these areas of impact are 0.036 acres and 0.021 acres, respectively. Again, since the stream channel will be minimally impacted, no mitigation is proposed.

There are no wetland impacts (wetland fringe around pond near Excess Fill Area #3 is avoided) or subsequent mitigation needs.

In summary, the only mitigation/compensation need involves one intermittent stream; and will be handled by payment of an in-lieu fee.

ATTACHMENT

Block 25

Adjoining Property Owners

Floyd County Board of Education
106 North Front Avenue
Prestonsburg, KY 41653

CXS Transportation, Inc.
Michael J. Ward, President
500 Water Street, 15th Floor
Jacksonville, FL 32202

Stoney Newsome
17731 KY Route 122
Hi Hat, KY 41636

Nelson Cook
19246 KY Route 122
Hi Hat, KY 41636

SUMMARY OF IMPACTS

Item No. 12-282.00

(Stations are Mainline unless otherwise noted)

1. Right Sta. 6+30 to Left Sta. 10+10 – Construct a 65' pipe culvert, with 90' of inlet channel and 60' of outlet channel. This replaces **396'** of channel and two culverts, of 64' and 46', on an **ephemeral** tributary (EPH#1) to Left Fork Beaver Creek. The impact to waters is **0.041 acres**. The drainage area affected is **5.6 acres**. The site is located near N37-22-23, W82-44-31. (Nationwide Permit No. 14)
2. Right Sta. 18+60 - Construct 194' of roadside drainage channel. This replaces **186'** (including a 22' pipe culvert) of an **ephemeral** channel (EPH#2). The channel becomes indistinguishable beyond the measured impact length, with flow continuing overland. The impact to waters is **0.017 acres**. The drainage area affected is **9.4 acres**. The site is located near N37-22-32, W82-44-23. (Non-jurisdictional)
3. Right Sta. 22+50 – Fill **85'** of **ephemeral** channel (EPH#3) for the construction of a roadside drainage channel. Flow from the ephemeral channel enters an existing roadside ditch, which does not have a defined outlet. The impact to waters is **0.010 acres**. The drainage area affected is **0.7 acres**. The site is located near N37-22-35, W82-44-19. (Non-jurisdictional)
4. Sta. 35+79 – Construct a three span (66'-66'-66') bridge over Left Fork Beaver Creek, a **perennial** stream (PER#1US). An existing low water ford will be eliminated; however, a **temporary low-water crossing** will be installed to maintain a 2-year flow event. The impact to waters is **0.014 acres** (pier construction along 60' of the right descending bank). The drainage area affected is **15782 acres** (24.66 sq.mi.). The site is located near N37-22-48, W82-44-16. (Nationwide Permit No. 14 and No. 33)
5. Sta. 46+10 – Construct a two span (100'-100') bridge over Left Fork Beaver Creek, a **perennial** stream (PER#1DS). An existing railroad bridge will be removed. The impacts expected are from the construction of a pier and rip-rap placement along 90' of the left descending bank; and the placement of rip-rap along 104' of the right descending bank. The impact to waters is **0.057 acres** (0.036 ac. along the left bank, and 0.021 ac. along the right bank). The drainage area affected is **16026 acres** (25.04 sq.mi.). The site is located near N37-22-58, W82-44-11. (Nationwide Permit No. 14)

EXCESS FILL AREAS

6. Excess Fill Area #1 – Develop an excess fill site in the floodplain of Left Fork Beaver Creek. The fill (footprint) is outside the floodway limits. There are **no impacts** to waters, however, a **temporary low-water crossing** will be installed to maintain a 2-

year flow event. The drainage area affected is **15782 acres** (along Left Fork Beaver Creek). The site is located (centrally) near N37-22-49, W82-44-20. (Nationwide Permit No. 33 for crossing; fill is non-jurisdictional)

7. Excess Fill Area #2 – Develop an excess fill site in an unnamed tributary to Left Fork Beaver Creek. This replaces **450' of intermittent stream** (INT#1), which will be relocated on the top of the fill area to maintain flow. The total impact to waters is **0.111 acres**. The drainage area affected is **162 acres**. The site is located (centrally) near N37-22-34, W82-44-01. (Individual Permit, WQC)
8. Excess Fill Area #3 – Develop an excess fill site in the floodplain of Left Fork Beaver Creek. The fill (footprint) is outside the floodway limits. There are **no impacts** to waters. The drainage area affected is **15514 acres** (along Left Fork Beaver Creek). The site is located (centrally) near N37-22-45, W82-44-24. (Non-jurisdictional)

Summary of Impacts Table

[illegible]

SUMMARY OF IMPACTS REQUIRING MITIGATION

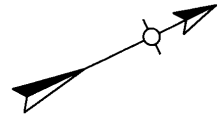
Site Number	Watershed, Stream I.D.	Project Station	Stream Type	EPA RBP Score	Impact Length (ft)	Impact Area (ac)	Impact Type	In-lieu Fee Amount (\$)
7	INT#1	Excess Fill Area 2	Intermittent	129	450	0.111	fill	80,325.00

Total Fee = 80,325.00

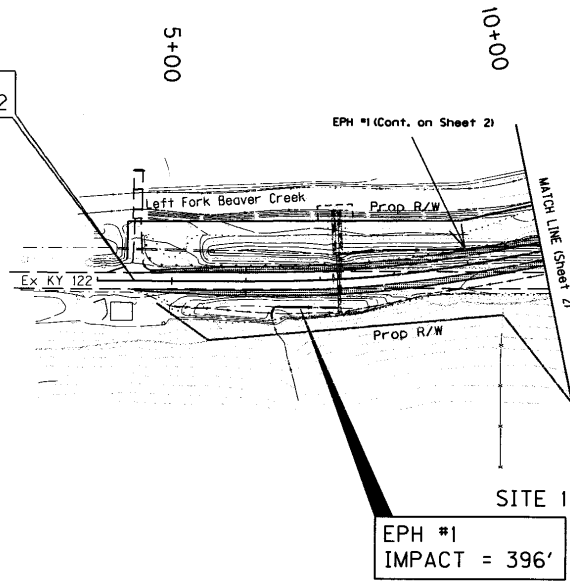
HUC Analysis of Stream Impacts

HUC #	HUC Name	STA.	Lat. / Long.	Sheet No.	Impact Category	Stream Type	Permit Type	Watershed (acres)	Impact (ft.)	Impact (acres)	RBP Score	Quality	Riffle/Pool Complex	Mitigation Required
05070203-050-150	Left Fork Beaver Ck.	35+79	N37-22-48 W82-44-16	3	Bridge	Perennial	NWP#14	15782	60RB	0.014	154	Average	Yes	No
"	"	46+10	N37-22-58 W82-44-11	4	Bridge	Perennial	NWP#14	16026	90LB 104RB	0.036 0.021	125	Average	Yes	No
"	"	Excess Fill Area #2	N37-22-34 W82-44-01	13	Fill	Intermittent	Ind 404/401	162	450	0.111	129	Average	Yes	Yes

LB= Left Bank
RB= Right Bank



Sta 4+50~Begin
Construction KY 122



SCALE 1"=200'

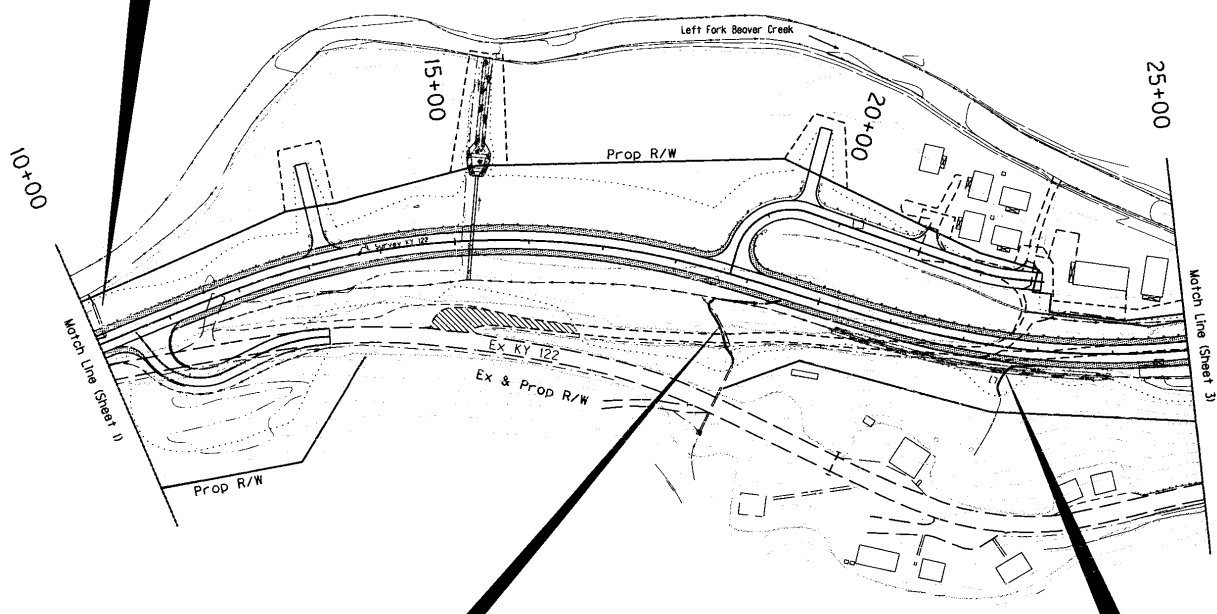
Kentucky
Transportation

PROJECT: Reconstruction of KY 122
COUNTY: Floyd
STATE: KENTUCKY

STA. 4+50 TO STA. 10+00

Stream - UT to Left Fork Beaver Creek
Permit No. 12-282.00
Sheet 1

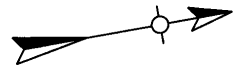
SITE 1
EPH#1
(Continued)



SITE 2
EPH#2
IMPACT = 164'

SITE 3
EPH#3
IMPACT = 85'

SCALE 1"=200'



40+00

Match Line (Sheet 4)

EXCESS FILL AREA #1
(See Sheet 11)

Temporary Low-water
Crossing
Left Fork Beaver Creek

35+00

SEE SHEET 6

Prop R/W

Ex & Prop R/W

EXCESS FILL AREA #3
(See Sheet 15)

30+00

Prop R/W

EX KY 122

5+00

25+00

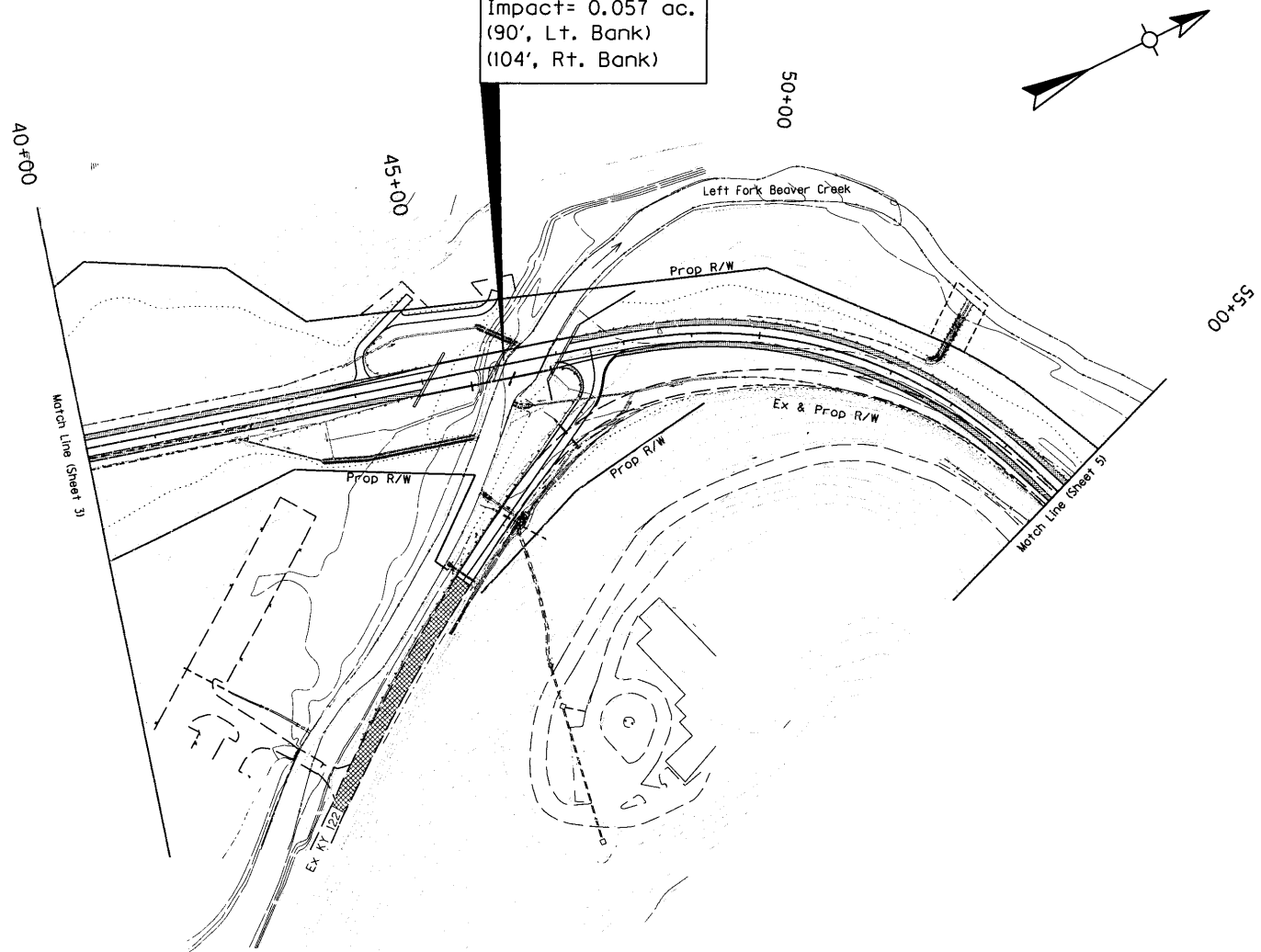
Match Line (Sheet 2)

SITE 4
PER#1US
Impact= 0.014 ac.
(60', Rt. Bank)

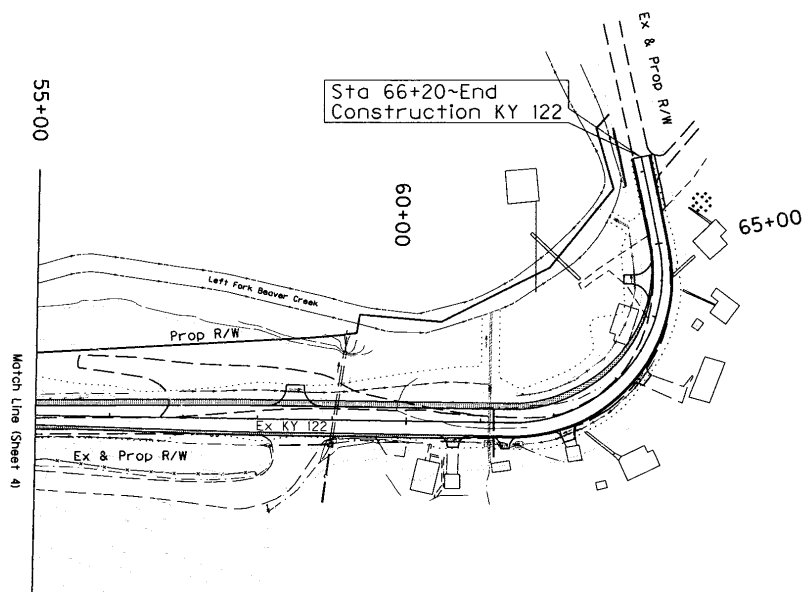
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Kentucky Transportation	PROJECT: Reconstruction of KY 122		Stream - Left Fork Beaver Creek	
	COUNTY: Floyd	STATE: KENTUCKY	STA. 25+00 TO STA. 40+00	Permit No. 12-282.00
	Sheet 3			

SITE 5
PER#IDS
Impact= 0.057 ac.
(90', Lt. Bank)
(104', Rt. Bank)



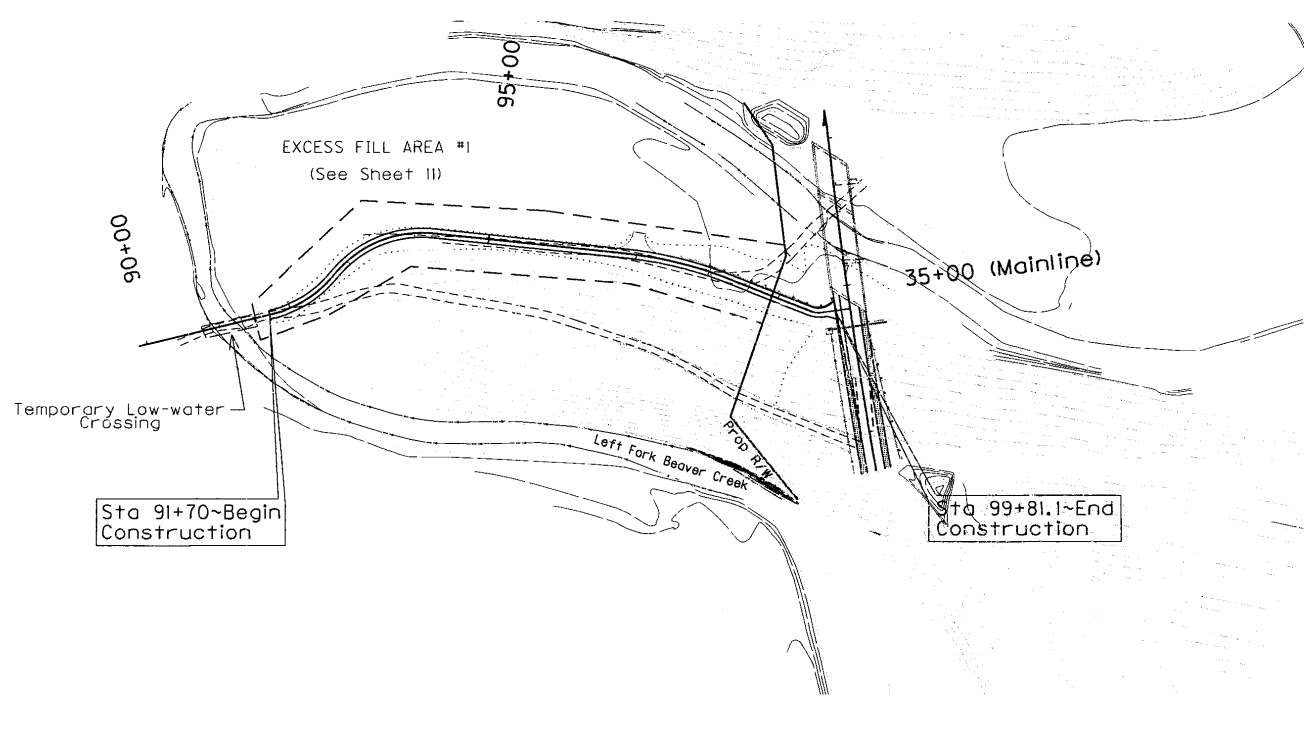
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No Impacts This Sheet

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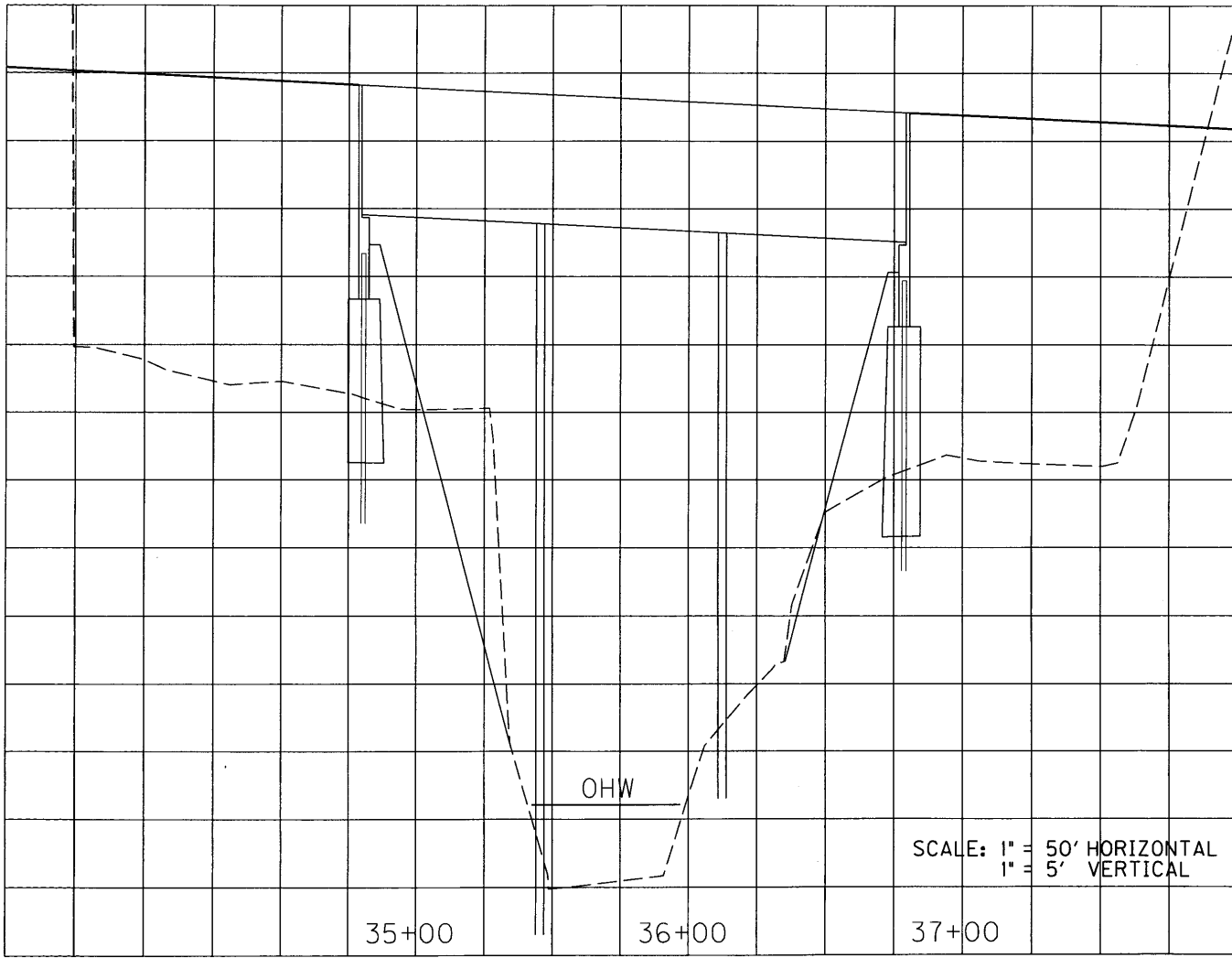
Kentucky Transportation		PROJECT: Reconstruction of KY 122		STRAUM - Left Fork Beaver Creek	
COUNTY: Floyd	STATE: KENTUCKY	STA. 55+00 to STA. 66+20	Permit No. 12-282.00	Sheet 5	



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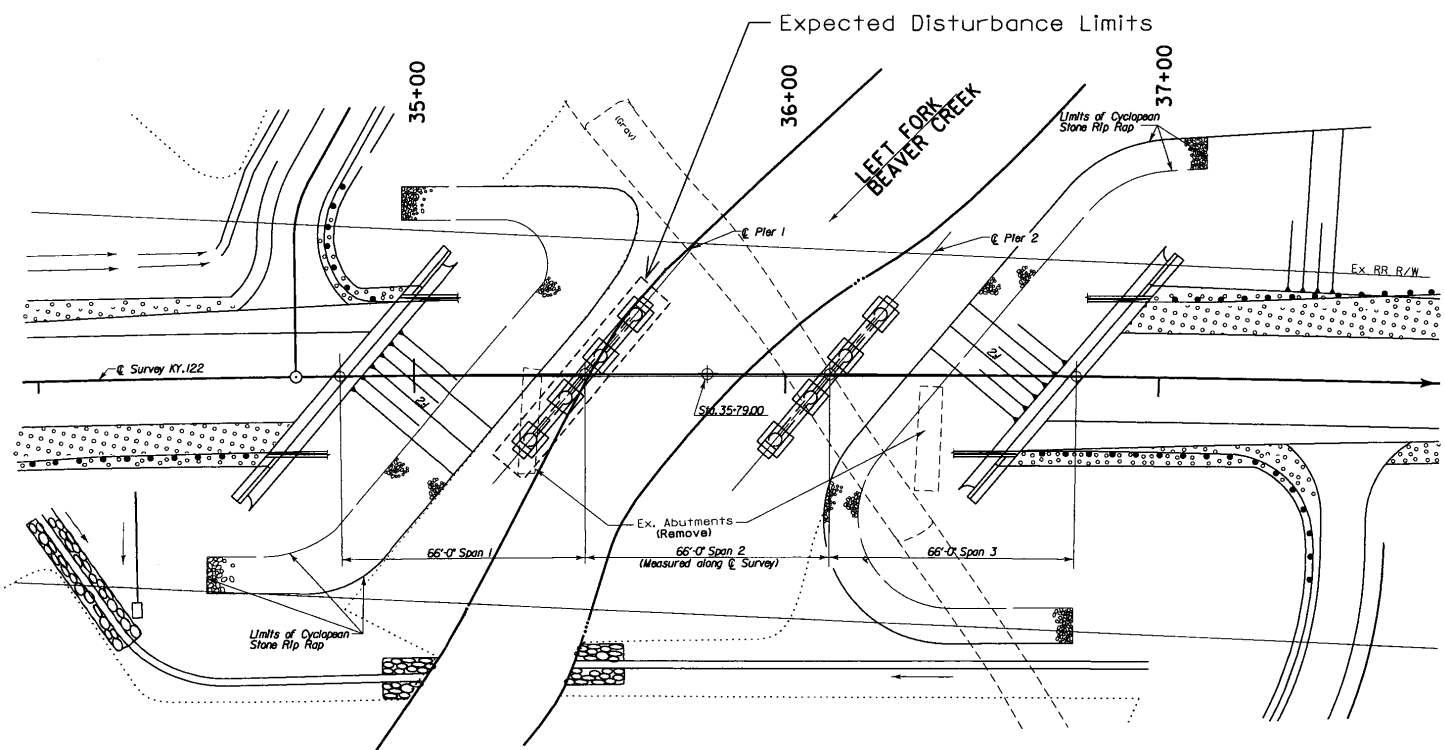
Kentucky Transportation		PROJECT: Reconstruction of KY 122	Stream - Left Fork Beaver Creek
COUNTY: Floyd	STATE: KENTUCKY	Entrance Road, STA. 91+70 to STA. 99+81	Permit No. 12-282.00
			Sheet 5

860
855
850
845
840
835
830
825



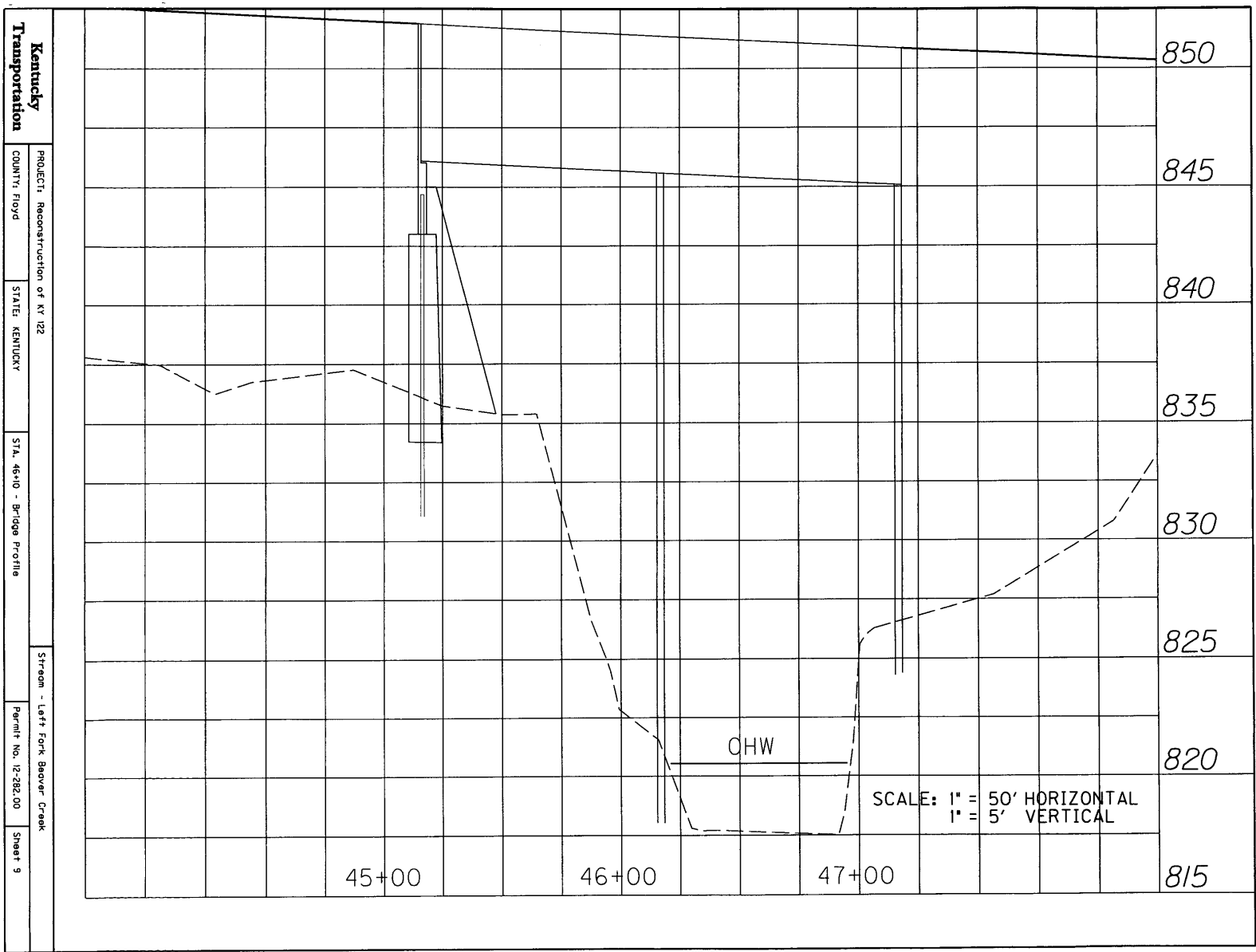
Kentucky
Transportation

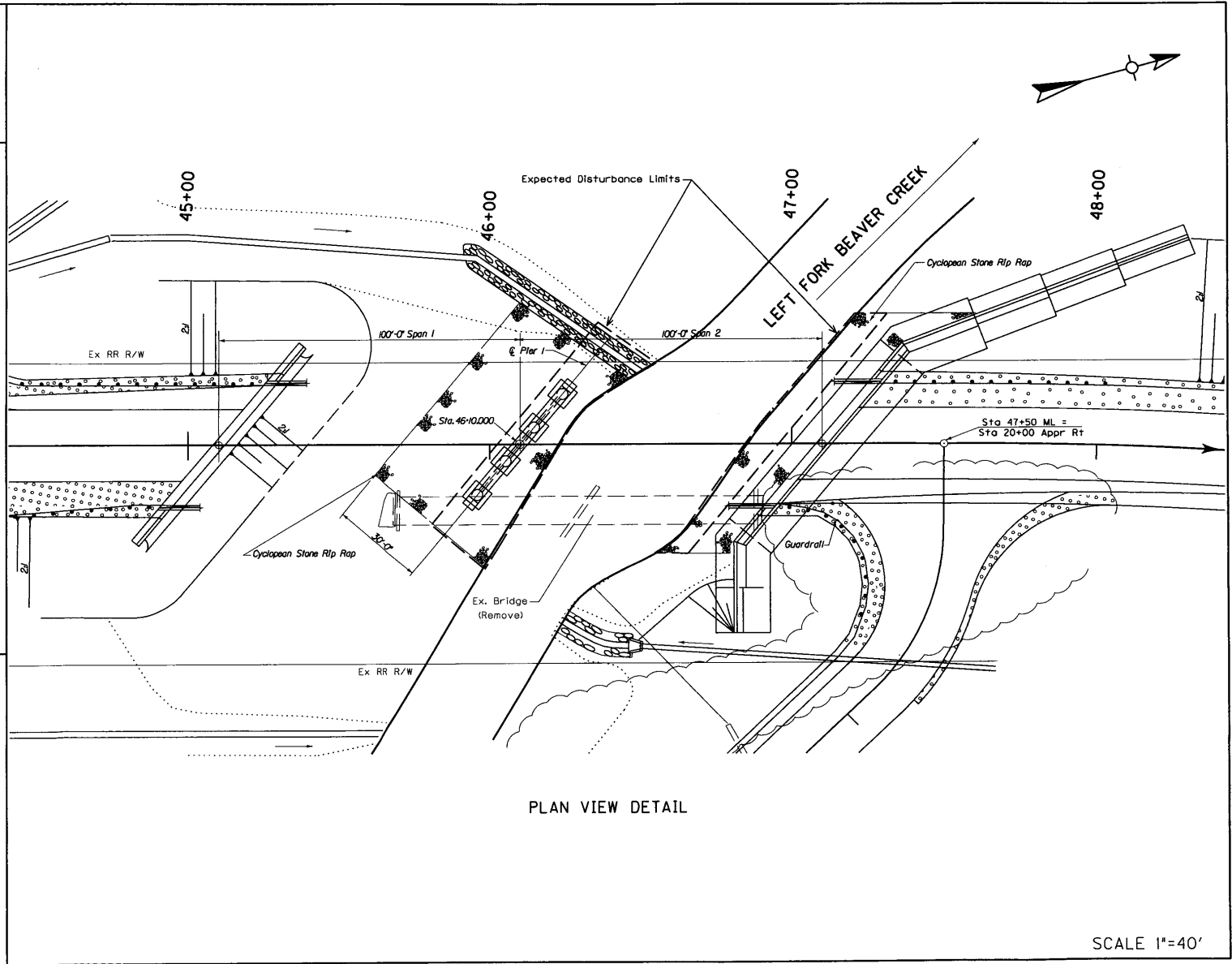
PROJECT: Reconstruction of KY 122
COUNTY: Floyd
STATE: KENTUCKY
STA. 35+19 - Bridge Profile
Stream - Left Fork Beaver Creek
Permit No. 12-282.00
Sheet 7



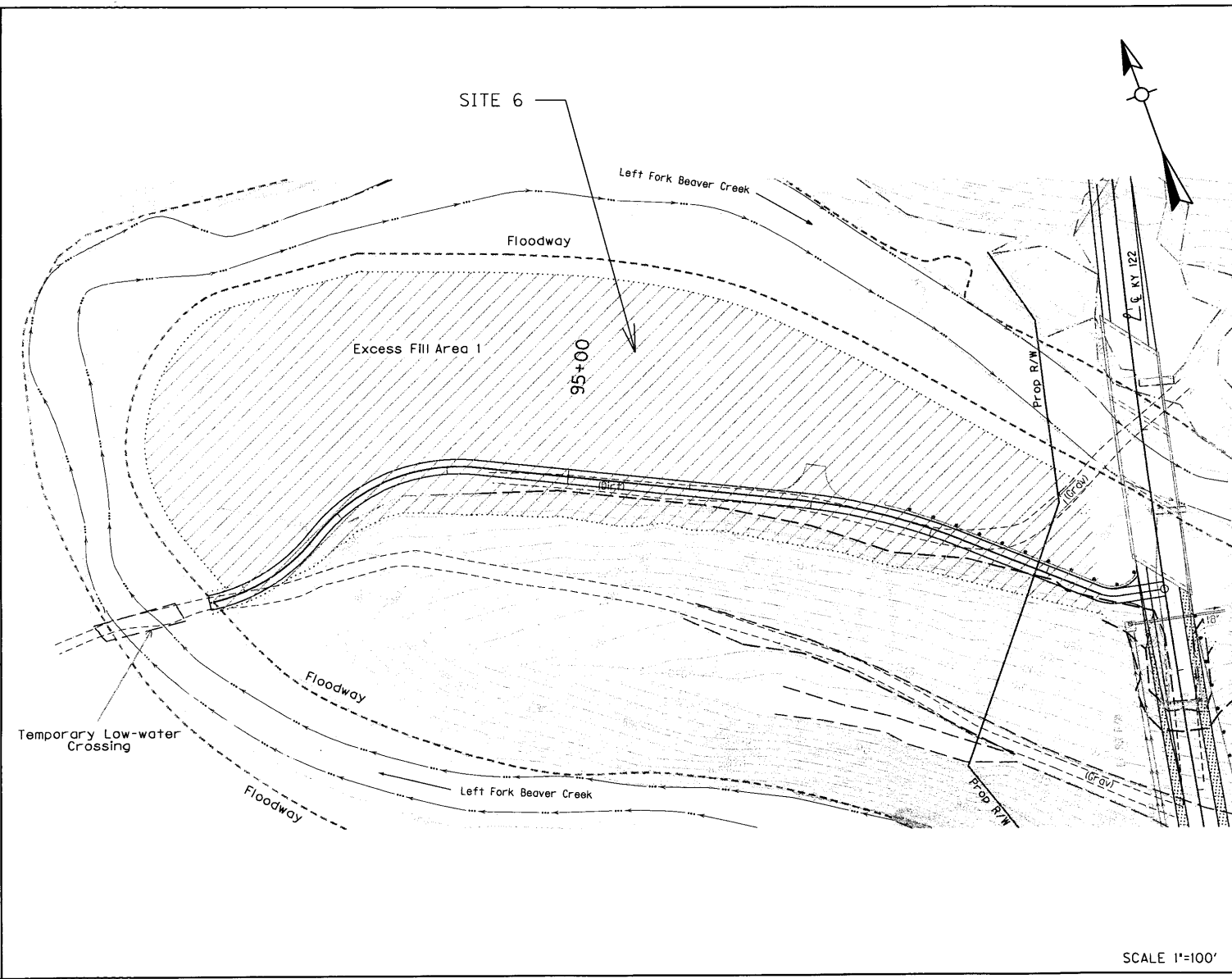
PLAN VIEW DETAIL

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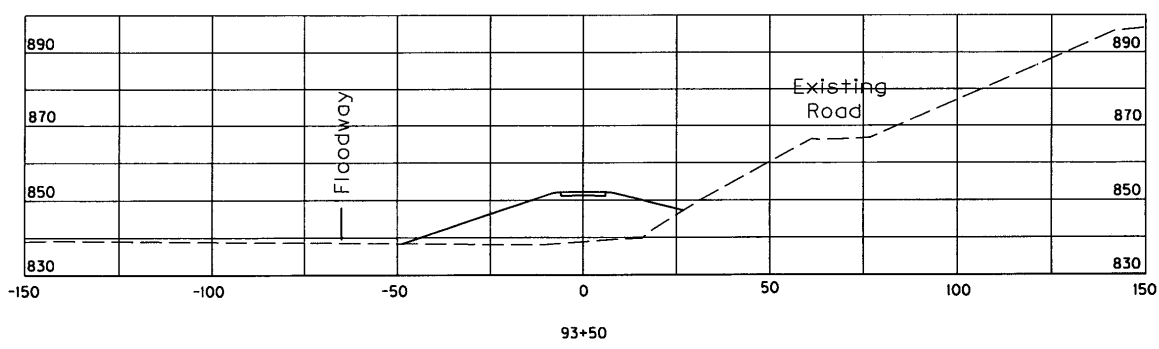
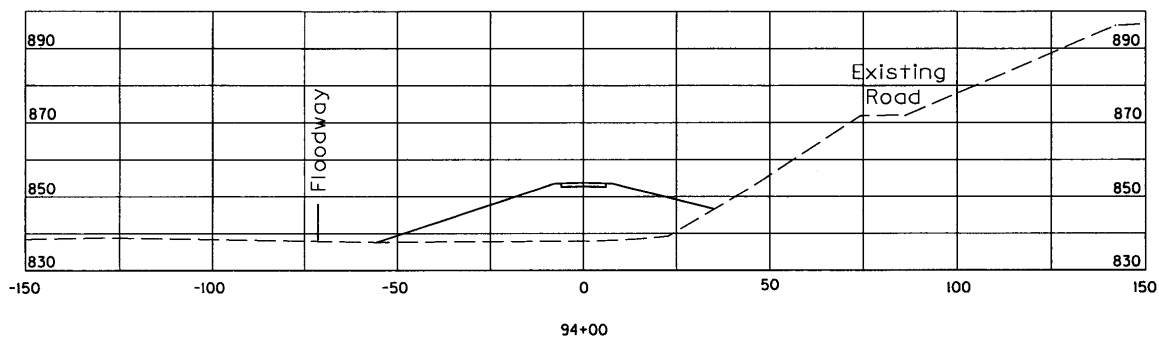




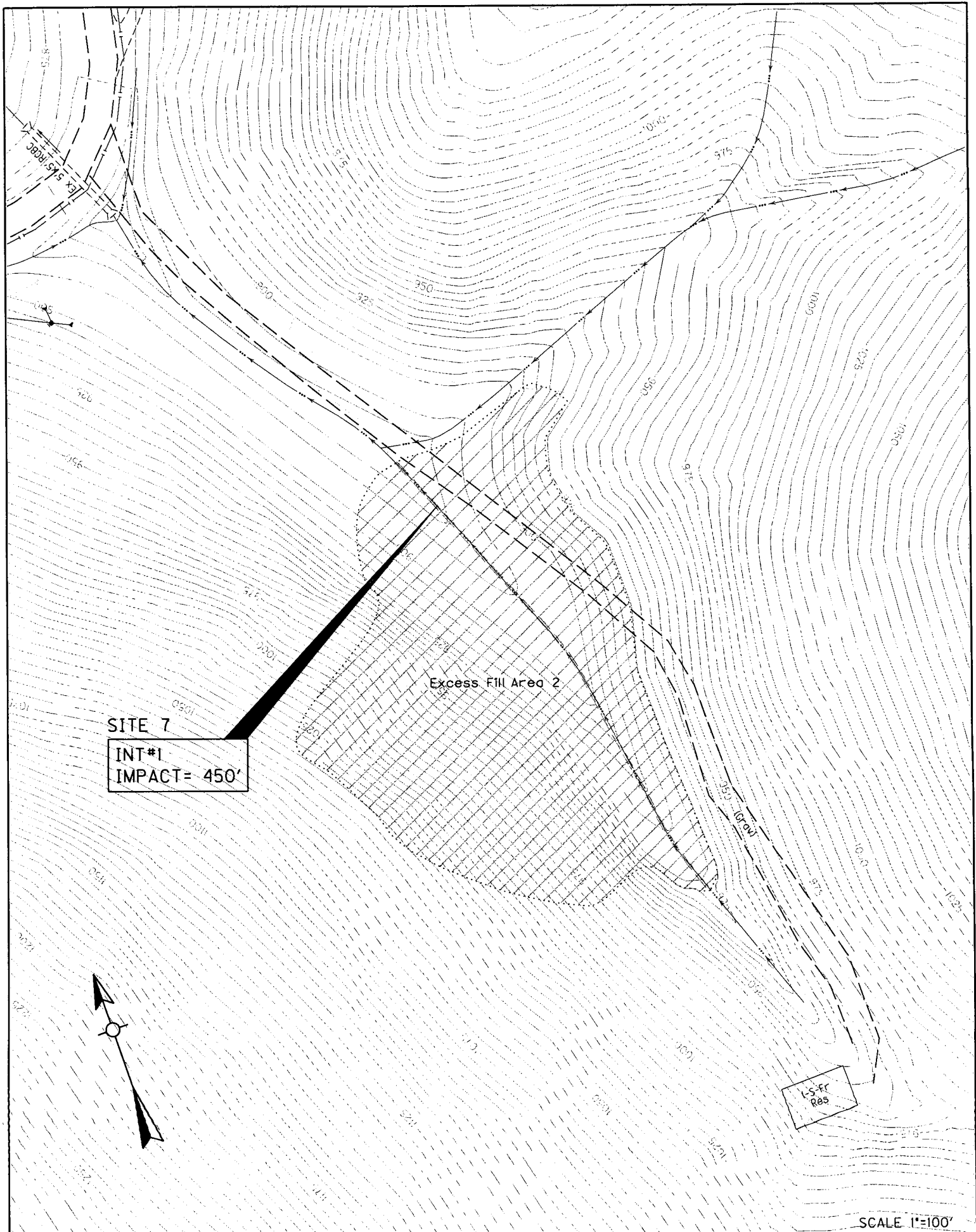
Kentucky Transportation	
PROJECT: Reconstruction of KY 122	COUNTY: Floyd
STATE: KENTUCKY	EXCESS FILL AREA 1
Stream - Left Fork Beaver Creek	Permit No. 12-282.00
Sheet II	



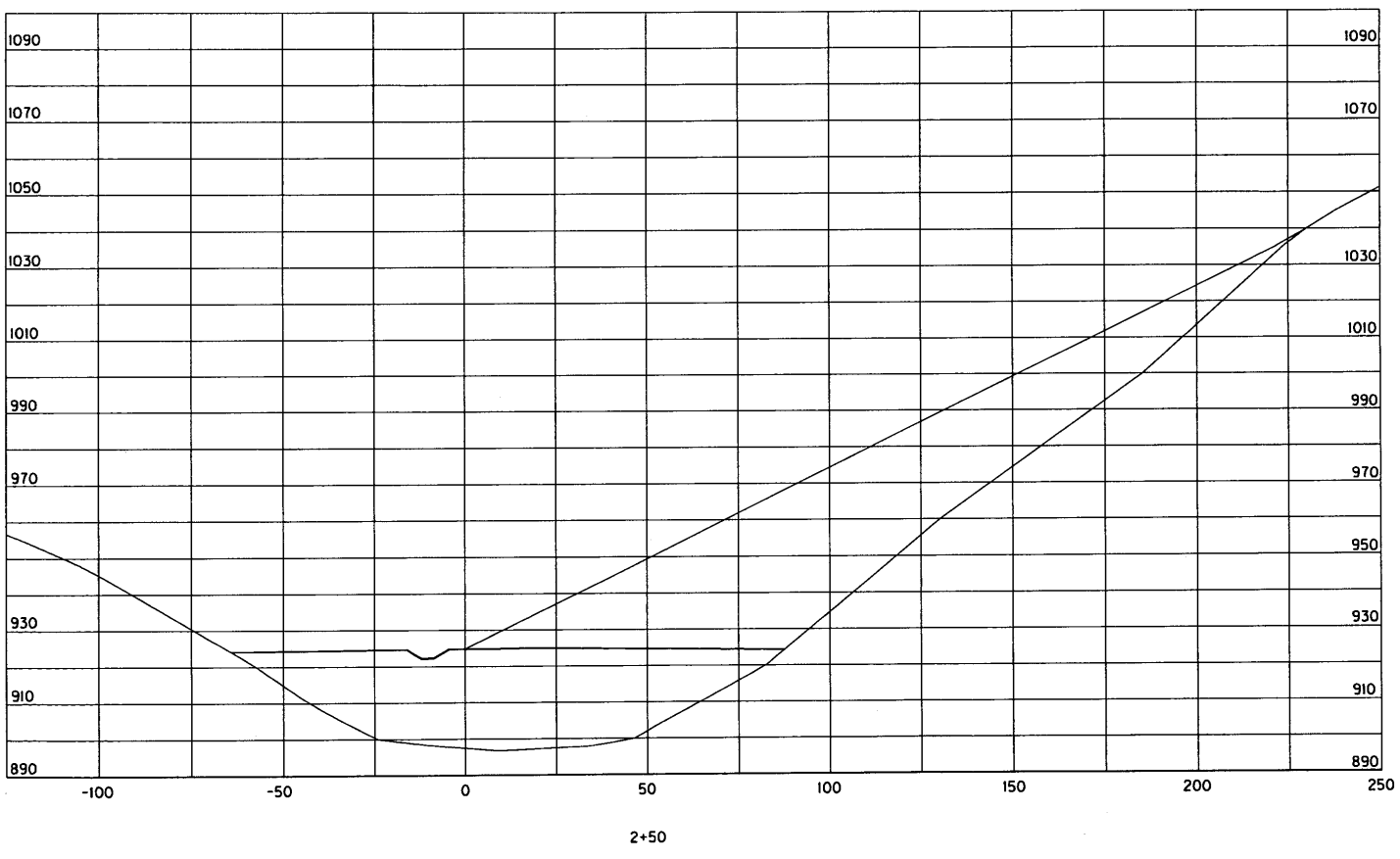
SCALE 1"=100'



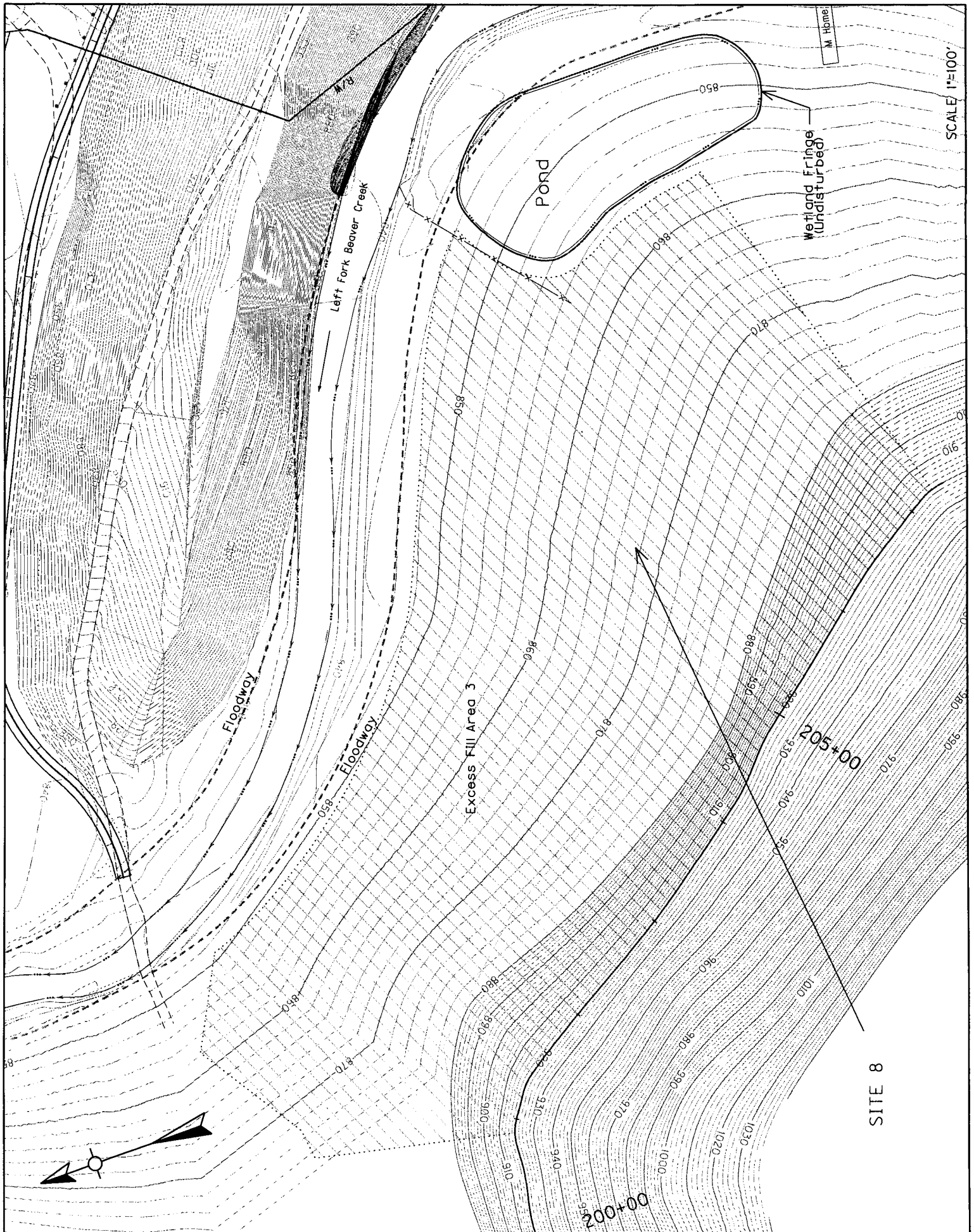
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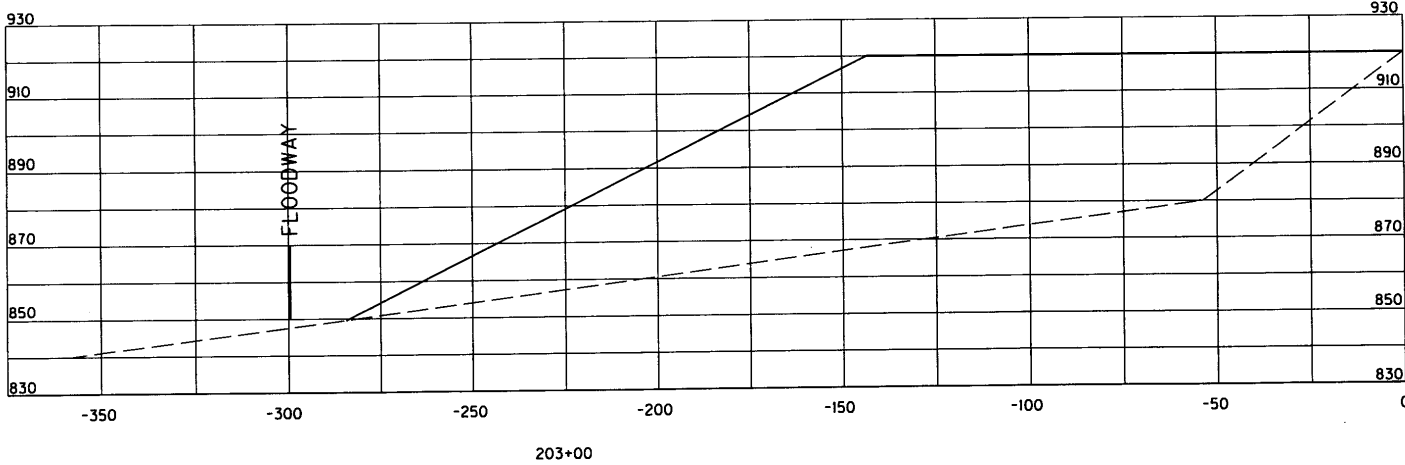
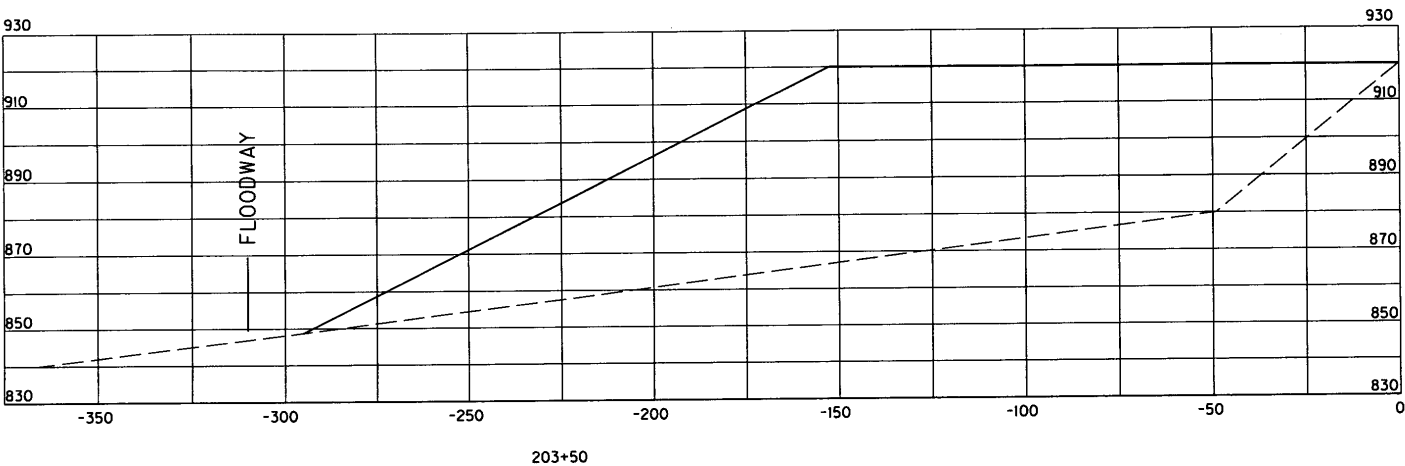


SCALE 1"=100'



SCALE 1"=40'





SCALE 1"=40'

High Gradient Stream Data Sheet

STREAM NAME: <i>PER#1US</i>				LOCATION: <i>Left Fk. Beaver Ck., near football field</i>					
STATION: <i>Assm't #4</i>		DRAINAGE AREA (AC) <i>15782</i>		BASIN/WATERSHED <i>Beaver Creek</i>					
LAT: <i>37-22-48.5</i>		LONG: <i>82-44-16</i>		COUNTY: <i>Floyd</i> USGS 7.5 TOPO;					
DATE: <i>10-06-09</i>		TIME: <input type="checkbox"/> AM <input checked="" type="checkbox"/> PM		INVESTIGATORS: <i>John Bottom, Julie Clark</i>					
TYPE SAMPLE: <input type="checkbox"/> P-CHEM <input type="checkbox"/> Macroinvertebrate <input type="checkbox"/> FISH <input type="checkbox"/> BACT.									
WEATHER: Now <input type="checkbox"/> Past 24 hours <input type="checkbox"/> Heavy rain <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Steady rain Air temperature <i>65</i> °F. Inches rainfall in past 24 hours <i>0.1</i> in <input checked="" type="checkbox"/> Intermittent showers <i>100</i> % Cloud Cover <input type="checkbox"/> Clear/sunny									
P-Chem: Temp (°F) <i>62.4</i> D.O. (mg/l) _____ % Saturation _____ pH(S.U.) _____ Cond.µs <i>328</i> <input type="checkbox"/> Grab									
INSTREAM WATERSHED FEATURES Stream Width <i>36</i> ft Stream Width BF <i>48</i> ft Range of Depth <i>0.5-2.0</i> ft Discharge _____ cfs Est. Reach Length _____ ft				LOCAL WATERSHED FEATURES: Predominant Surrounding Land Use: <input type="checkbox"/> Surface Mining <input type="checkbox"/> Construction <input checked="" type="checkbox"/> Forest <input type="checkbox"/> Deep Mining <input type="checkbox"/> Commercial <input checked="" type="checkbox"/> Pasture/Grazing (football field) <input type="checkbox"/> Oil Wells <input type="checkbox"/> Industrial <input type="checkbox"/> Silviculture <input type="checkbox"/> Land Disposal <input type="checkbox"/> Row Crops <input type="checkbox"/> Urban Runoff/Storm Sewers					
Hydraulic Structures: <input type="checkbox"/> Dams <input checked="" type="checkbox"/> Bridge Abutments <input type="checkbox"/> Dry <input type="checkbox"/> Pooled <input type="checkbox"/> Low <input checked="" type="checkbox"/> Normal <input checked="" type="checkbox"/> Perennial <input type="checkbox"/> Intermittent <input type="checkbox"/> Island <input type="checkbox"/> Waterfalls <input type="checkbox"/> High <input type="checkbox"/> Very Rapid or Torrential <input type="checkbox"/> Ephemeral <input type="checkbox"/> Seep <input type="checkbox"/> Other <input type="checkbox"/> Culverts									
Riparian Vegetation: Dominate Type: <input checked="" type="checkbox"/> Trees <input checked="" type="checkbox"/> Shrubs <input checked="" type="checkbox"/> Grasses <input checked="" type="checkbox"/> Herbaceous Number of Strata <i>4</i>		Dom. Tree/Shrub Taxa <i>Black locust</i> <i>Sycamore</i> <i>Black walnut</i> <i>Box elder</i> <i>Black cherry</i>		Canopy Cover; <input type="checkbox"/> Fully Exposed (0-25%) <input type="checkbox"/> Partially Exposed (25-50%) <input checked="" type="checkbox"/> Partially Shaded (50-75%) <input type="checkbox"/> Fully Shaded (75-100%)		Channel Alterations; <input type="checkbox"/> Dredging <input type="checkbox"/> Channelization (<input type="checkbox"/> Full <input type="checkbox"/> Partial)			
Substrate <input checked="" type="checkbox"/> Est. <input type="checkbox"/> P.C		Riffle <i>70</i> %		Run; _____ %		Pool <i>30</i> %			
Silt/Clay (<0.06 mm)						<i>5</i>			
Sand (0.06-2 mm)		<i>10</i>				<i>15</i>			
Gravel (2-64 mm)		<i>30</i>				<i>60</i>			
Cobble (64-256 mm)		<i>40</i>				<i>20</i>			
Boulders (>256 mm)		<i>20</i>							
Bedrock									
Habitat		Condition Category							
Parameter		Optimal		Suboptimal		Marginal		Poor	
1. Epifaunal Substrate/ Available Cover		Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient.		40-70% mix of stable habitat; well suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of new fall, but not yet prepared for colonization (may rate at high end of scale).		20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.		Less than 20% stable habitat" lack of habitat is obvious; substrate unstable or lacking.	
SCORE		20 19 18 17 16		15 14 13 12 11		10 9 8 7 6		5 4 3 2 1 0	
2. Embeddedness		Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space.		Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.		Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.		Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.	
SCORE		20 19 18 17 16		15 14 13 12 11		10 9 8 7 6		5 4 3 2 1 0	
3. Velocity/Depth Regime		All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow. Deep > 1.5 feet.		Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes)		Only 2 of the 4 habitat regimes present (if fast-shallow or slow shallow are missing, score low)		Dominated by 1 velocity/depth regime.	
SCORE		20 19 18 17 16		15 14 13 12 11		10 9 8 7 6		5 4 3 2 1 0	

PER#105

4. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills > 75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr.) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40-80% of stream reach channelized and disrupted.	Banks shored with gabion of cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Frequency of Riffles	Occurrence of riffles relatively frequent; spacing between riffles 5 to 7 stream widths. Variety of habitat is key. In streams where riffles are continuous, boulders or logs are important.	Occurrence of riffles infrequent; distance between riffles divided by stream width is between 7 to 15.	Occasional riffle or bend: bottom contours provide some habitat; distance between riffles divided by stream width is between 15 to 25.	Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by stream width is > than 25.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable, infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable, 30-60% of bank in reach has areas of erosion, high erosion potential during floods.	Unstable, many eroded areas, "raw" areas frequently along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
9. Vegetative Protection (score each bank)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruptive of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone).	Width of riparian zone > 18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters; little or no riparian vegetation due to human activities.
SCORE (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0

Total Score

154

NOTES/COMMENTS; Site for proposed bridge

High Gradient Stream Data Sheet

STREAM NAME: <i>PER#1DS</i>			LOCATION: <i>Left Fork Beaver Creek</i>		
STATION: <i>Assm't #6</i>	DRAINAGE AREA (AC)	<i>16026</i>	BASIN/WATERSHED <i>Beaver Creek</i>		
LAT: <i>37-22-58</i>		LONG: <i>82-44-11</i>	COUNTY: <i>Floyd</i> USGS 7.5 TOPO;		
DATE: <i>10-06-09</i>		TIME: <i> </i> <input type="checkbox"/> AM <input checked="" type="checkbox"/> PM	INVESTIGATORS: <i>John Bottom</i>		
TYPE SAMPLE: <input type="checkbox"/> P-CHEM <input type="checkbox"/> Macroinvertebrate <input type="checkbox"/> FISH <input type="checkbox"/> BACT.					
WEATHER: Now <input type="checkbox"/> Past 24 hours <input type="checkbox"/> Heavy rain <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Steady rain Air temperature <i>65</i> °F. Inches rainfall in past 24 hours <i>0.1</i> in <input checked="" type="checkbox"/> Intermittent showers <i>100</i> % Cloud Cover <input type="checkbox"/> Clear/sunny					
P-Chem: Temp (°F) <i>62.4</i> D.O. (mg/l) <i> </i> % Saturation <i> </i> pH(S.U.) <i> </i> Cond.µs <i>330</i> <input type="checkbox"/> Grab					
INSTREAM WATERSHED FEATURES Stream Width <i>36</i> ft Stream Width BF <i>48</i> ft Range of Depth <i>0.5-2</i> ft Discharge <i> </i> cfs Est. Reach Length <i> </i> ft			LOCAL WATERSHED FEATURES: Predominant Surrounding Land Use: <input type="checkbox"/> Surface Mining <input type="checkbox"/> Construction <input checked="" type="checkbox"/> Forest <input type="checkbox"/> Deep Mining <input type="checkbox"/> Commercial <input checked="" type="checkbox"/> Pasture/Grazing <input type="checkbox"/> Oil Wells <input type="checkbox"/> Industrial <input type="checkbox"/> Silviculture <input type="checkbox"/> Land Disposal <input type="checkbox"/> Row Crops <input type="checkbox"/> Urban Runoff/Storm Sewers		
Hydraulic Structures: <input type="checkbox"/> Dams <input type="checkbox"/> Bridge Abutments <input type="checkbox"/> Island <input type="checkbox"/> Waterfalls <input type="checkbox"/> Other <input type="checkbox"/> Culverts Stream Flow: <input type="checkbox"/> Dry <input type="checkbox"/> Pooled <input type="checkbox"/> Low <input checked="" type="checkbox"/> Normal <input type="checkbox"/> High <input type="checkbox"/> Very Rapid or Torrential Stream Type: <input checked="" type="checkbox"/> Perennial <input type="checkbox"/> Intermittent <input type="checkbox"/> Ephemeral <input type="checkbox"/> Seep					
Riparian Vegetation: Dominate Type: <input checked="" type="checkbox"/> Trees <input checked="" type="checkbox"/> Shrubs <input checked="" type="checkbox"/> Grasses <input checked="" type="checkbox"/> Herbaceous Number of Strata <i>4</i>		Dom. Tree/Shrub Taxa <i>Black walnut</i> <i>Sycamore</i> <i>Box elder</i>		Canopy Cover; <input type="checkbox"/> Fully Exposed (0-25%) <input checked="" type="checkbox"/> Partially Exposed (25-50%) <input type="checkbox"/> Partially Shaded (50-75%) <input type="checkbox"/> Fully Shaded (75-100%)	
Channel Alterations; <input type="checkbox"/> Dredging <input type="checkbox"/> Channelization (<input type="checkbox"/> Full <input checked="" type="checkbox"/> Partial)					
Substrate <input checked="" type="checkbox"/> Est. <input type="checkbox"/> P.C		Riffle <i>50</i> %	Run; <i> </i> %	Pool <i>50</i> %	
Silt/Clay (<0.06 mm)				<i>15</i>	
Sand (0.06-2 mm)				<i>40</i>	
Gravel (2-64 mm)		<i>50</i>		<i>30</i>	
Cobble (64-256 mm)		<i>40</i>		<i>10</i>	
Boulders (>256 mm)		<i>10</i>		<i>5</i>	
Bedrock					
Habitat	Condition Category				
Parameter	Optimal	Suboptimal	Marginal	Poor	
1. Epifaunal Substrate/ Available Cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient.	40-70% mix of stable habitat; well suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of new fall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat" lack of habitat is obvious; substrate unstable or lacking.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	
2. Embeddedness	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space.	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	
3. Velocity/Depth Regime	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow. Deep > 1.5 feet.	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes)	Only 2 of the 4 habitat regimes present (if fast-shallow or slow shallow are missing, score low)	Dominated by 1 velocity/depth regime.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	

PER#1 DS

4. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills > 75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr.) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40-80% of stream reach channelized and disrupted.	Banks shored with gabion of cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Frequency of Riffles	Occurrence of riffles relatively frequent; spacing between riffles 5 to 7 stream widths. Variety of habitat is key. In streams where riffles are continuous, boulders or logs are important.	Occurrence of riffles infrequent; distance between riffles divided by stream width is between 7 to 15.	Occasional riffle or bend: bottom contours provide some habitat; distance between riffles divided by stream width is between 15 to 25.	Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by stream width is > than 25.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable, infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable, 30-60% of bank in reach has areas of erosion, high erosion potential during floods.	Unstable, many eroded areas, "raw" areas frequently along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
9. Vegetative Protection (score each bank)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruptive of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
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10. Riparian Vegetative Zone Width (score each bank riparian zone).	Width of riparian zone > 18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters; little or no riparian vegetation due to human activities.
SCORE (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0

Total Score

125

NOTES/COMMENTS; Site for proposed bridge

High Gradient Stream Data Sheet

STREAM NAME: <i>INT#1</i>			LOCATION: <i>UT to Left Fk. Beaver Creek</i>		
STATION: <i>Assm't #1</i>	DRAINAGE AREA (AC)	<i>162</i>	BASIN/WATERSHED <i>Beaver Creek</i>		
LAT: <i>37-22-38.5</i>		LONG: <i>82-49-03.6</i>	COUNTY: <i>Floyd</i> USGS 7.5 TOPO;		
DATE: <i>10-06-09</i>		TIME: <input checked="" type="checkbox"/> AM <input type="checkbox"/> PM	INVESTIGATORS: <i>John Bottom, Julie Clark</i>		
TYPE SAMPLE: <input type="checkbox"/> P-CHEM <input type="checkbox"/> Macroinvertebrate <input type="checkbox"/> FISH <input type="checkbox"/> BACT.					
WEATHER: Now Past 24 hours Has there been a heavy rain in the last 7 days? <input type="checkbox"/> <input type="checkbox"/> Heavy rain <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> <input type="checkbox"/> Steady rain Air temperature <i>67</i> °F. Inches rainfall in past 24 hours <i> </i> in <input type="checkbox"/> <input type="checkbox"/> Intermittent showers <i>100</i> % Cloud Cover <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> Clear/sunny					
P-Chem: Temp (°F) <i>58.6</i> D.O. (mg/l) <i> </i> % Saturation <i> </i> pH(S.U.) <i> </i> Cond.µs <i>293</i> <input type="checkbox"/> Grab					
INSTREAM WATERSHED FEATURES Stream Width <i>3.3</i> ft Stream Width BF <i>10.7</i> ft Range of Depth <i>0.1-1.0</i> ft Discharge <i> </i> cfs Est. Reach Length <i> </i> ft			LOCAL WATERSHED FEATURES: Predominant Surrounding Land Use: <input type="checkbox"/> Surface Mining <input type="checkbox"/> Construction <input checked="" type="checkbox"/> Forest <input type="checkbox"/> Deep Mining <input type="checkbox"/> Commercial <input type="checkbox"/> Pasture/Grazing <input type="checkbox"/> Oil Wells <input type="checkbox"/> Industrial <input type="checkbox"/> Silviculture <input type="checkbox"/> Land Disposal <input type="checkbox"/> Row Crops <input type="checkbox"/> Urban Runoff/Storm Sewers		
Hydraulic Structures: Stream Flow; Stream Type; <input type="checkbox"/> Dams <input type="checkbox"/> Bridge Abutments <input type="checkbox"/> Dry <input type="checkbox"/> Pooled <input type="checkbox"/> Low <input checked="" type="checkbox"/> Normal <input type="checkbox"/> Perennial <input checked="" type="checkbox"/> Intermittent <input type="checkbox"/> Island <input type="checkbox"/> Waterfalls <input type="checkbox"/> High <input type="checkbox"/> Very Rapid or Torrential <input type="checkbox"/> Ephemeral <input type="checkbox"/> Seep <input type="checkbox"/> Other <input checked="" type="checkbox"/> Culverts					
Riparian Vegetation: Dominate Type: <input checked="" type="checkbox"/> Trees <input type="checkbox"/> Shrubs <input type="checkbox"/> Grasses <input checked="" type="checkbox"/> Herbaceous Number of Strata <i>2</i>		Dom. Tree/Shrub Taxa <i>Sugar maple</i> <i>Sycamore</i> <i>Paw paw</i> <i>Beech</i>		Canopy Cover; <input type="checkbox"/> Fully Exposed (0-25%) <input type="checkbox"/> Partially Exposed (25-50%) <input type="checkbox"/> Partially Shaded (50-75%) <input checked="" type="checkbox"/> Fully Shaded (75-100%)	
Channel Alterations; <input type="checkbox"/> Dredging <input type="checkbox"/> Channelization (<input type="checkbox"/> Full <input type="checkbox"/> Partial)					
Substrate <input checked="" type="checkbox"/> Est. <input type="checkbox"/> P.C. Riffle <i>70</i> % Run; <i> </i> % Pool <i>30</i> %					
Silt/Clay (<0.06 mm)				<i>20</i>	
Sand (0.06-2 mm)		<i>20</i>		<i>30</i>	
Gravel (2-64 mm)		<i>30</i>		<i>30</i>	
Cobble (64-256 mm)		<i>40</i>		<i>20</i>	
Boulders (>256 mm)		<i>10</i>			
Bedrock					
Habitat	Condition Category				
Parameter	Optimal	Suboptimal	Marginal	Poor	
1. Epifaunal Substrate/Available Cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient.	40-70% mix of stable habitat; well suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of new fall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat" lack of habitat is obvious; substrate unstable or lacking.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	
2. Embeddedness	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space.	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	
3. Velocity/Depth Regime	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow. Deep > 1.5 feet.	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes)	Only 2 of the 4 habitat regimes present (if fast-shallow or slow shallow are missing, score low)	Dominated by 1 velocity/depth regime.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	

INT #1

4. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
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SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr.) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40-80% of stream reach channelized and disrupted.	Banks shored with gabion of cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Frequency of Riffles	Occurrence of riffles relatively frequent; spacing between riffles 5 to 7 stream widths. Variety of habitat is key. In streams where riffles are continuous, boulders or logs are important.	Occurrence of riffles infrequent; distance between riffles divided by stream width is between 7 to 15.	Occasional riffle or bend: bottom contours provide some habitat; distance between riffles divided by stream width is between 15 to 25.	Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by stream width is > than 25.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable, infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable, 30-60% of bank in reach has areas of erosion, high erosion potential during floods.	Unstable, many eroded areas, "raw" areas frequently along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
9. Vegetative Protection (score each bank)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruptive of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone).	Width of riparian zone > 18 meters; human activities (i.e., parking lots, roadbeds, clearcuts, lawns, or crops) have not impacted zone	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters; little or no riparian vegetation due to human activities.
SCORE (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0

Total Score

129

NOTES/COMMENTS; Site for Excess Fill Area No. 2

